

2005 Fall Meeting
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1340h
SM23A-0395 INVITED
The Fast Plasma Instrument for the MMS Mission
*** Moore, T E**
thomas.e.moore@nasa.gov
NASA's Goddard Space Flight Center, Laboratory for Solar and Space Physics, Greenbelt, MD 20771
United States
Burch, J L
jburch@swri.org
Southwest Research Institute, 6220 Culebra Rd., San Antonio, TX 78238 United States
Collier, M R
michael.r.collier@nasa.gov
NASA's Goddard Space Flight Center, Laboratory for Solar and Space Physics, Greenbelt, MD 20771
United States
Chornay, D J
dennis.chornay@gsfc.nasa.gov
University of Maryland, Department of Astronomy, College Park, MD 20742 United States
Adrian, M L
mark.l.adrian@nasa.gov
NASA's Goddard Space Flight Center, Laboratory for Solar and Space Physics, Greenbelt, MD 20771
United States
Coates, A J
ajc@mssl.ucl.ac.uk
MSSL - University College London, Holmbury St. Mary Science Laboratory, Dorking, Surrey, DC RH5 6NT United Kingdom
Linder, D
drl@mssl.ucl.ac.uk
MSSL - University College London, Holmbury St. Mary Science Laboratory, Dorking, Surrey, DC RH5 6NT United Kingdom
Mukai, T
mukai@stp.isas.jaxa.jp
Institute for Space and Aeronautical Sciences, 3-1-1, Yoshinodai Sagimahara, Kanagawa, MI 229-8510 Japan
Saito, Y
saito@stp.isas.jaxa.jp
Institute for Space and Aeronautical Sciences, 3-1-1, Yoshinodai Sagimahara, Kanagawa, MI 229-8510 Japan
Chandler, M O
michael.o.chandler@nasa.gov
NASA Marshall Space Flight Center, National Space Science and Technology Ctr., 320 Sparkman Dr., Huntsville, AL 35805 United States
Coffey, V N
victoria.n.coffey@nasa.gov
NASA Marshall Space Flight Center, National Space Science and Technology Ctr., 320 Sparkman Dr., Huntsville, AL 35805 United States
Lobell, J V
james.v.lobell@nasa.gov
NASA's Goddard Space Flight Center, Laboratory for Solar and Space Physics, Greenbelt, MD 20771
United States
Ericsson, A J
aprille.j.ericsson@nasa.gov
NASA's Goddard Space Flight Center, Laboratory for Solar and Space Physics, Greenbelt, MD 20771
United States
Bialas, T
thomas.bialas@nasa.gov
NASA's Goddard Space Flight Center, Laboratory for Solar and Space Physics, Greenbelt, MD 20771
United States
Buenfil, M
manuel.buenfil@nasa.gov
NASA's Goddard Space Flight Center, Laboratory for Solar and Space Physics, Greenbelt, MD 20771
United States

Johnson, M A

michael.a.johnson@nasa.gov

NASA's Goddard Space Flight Center, Laboratory for Solar and Space Physics, Greenbelt, MD 20771

United States

Shappirio, M

mark.shappirio@nasa.gov

NASA's Goddard Space Flight Center, Laboratory for Solar and Space Physics, Greenbelt, MD 20771

United States

Yeh, P

pen-shu.yeh@nasa.gov

NASA's Goddard Space Flight Center, Laboratory for Solar and Space Physics, Greenbelt, MD 20771

United States

A clear picture of short-scale reconnection structures and their rapid motions will require observations from closely spaced platforms at a 30ms measurement cadence. The Fast Plasma Instrument (FPI) for the MMS mission exceeds this demanding requirement by acquiring full sky, high-resolution (11deg) electron plasma velocity distributions every 25 ms. FPI also delivers four full sky, medium-resolution (45deg) distributions every 6 ms, for unprecedented access to electron scale dynamics within the reconnection diffusion region. Data compression and burst memory management provide up to 16 minutes of high time resolution data during each orbit of the four MMS spacecraft. Each spacecraft will intelligently downlink the data sequences that contain the greatest amount of temporal structure. For both electrons and ions, FPI will realize these specifications by means of eight half-top-hat energy analyzers. Each analyzer has a 180-deg x 6-deg fan-shaped field of view (FOV) aligned with the s/c spin axis, and is fitted with lateral FOV deflection electrodes. The analyzers are packaged as four Dual Electron Spectrometers and four Dual Ion Spectrometers on each spacecraft. When distributed properly around the spacecraft, these packages provide an instantaneous full-sky view that is independent of spacecraft spin rate. This approach makes available a very large instantaneous aperture for plasma measurements at the high sensitivity required for fast exposures. FPI is based on flight heritage from Cluster/PEACE, Geotail/LEP, Polar/Hydra, and Rosetta/IES.

<http://fpi.gsfc.nasa.gov>

2723 Magnetic reconnection (7526, 7835)

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SPA-Magnetospheric Physics [SM]

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